

# EXHIBIT 11

**Exemplary Infringement Claim Chart for U.S. Patent No. 10,912,501**



Defendant Masimo Corporation and Counterclaimants Masimo Corporation and Cercacor Laboratories, Inc. (“Masimo”) hereby provides exemplary evidence of infringement of the claims of U.S. Patent No. 10,912,501 (“the ’501 Patent”). Masimo’s chart below demonstrates infringement of Claim 1 of the ’501 Patent by an exemplary accused product—Apple Watch Series 6. The chart shows how the exemplary accused product infringes that claim literally or under the doctrine of equivalents. The chart (including any images, annotations, and/or highlighting herein) is exemplary and demonstrates infringement of the identified claim regardless of whether the accused product is used with other modes and/or with other firmware or software. Masimo expressly reserves the right to amend or supplement this chart in view of further discovery, information, and analysis, including by, but not limited to, identifying additional accused products and evidence of infringement.


Claim 1	Apple Watch Series 6
<p>[1PRE] A user-worn device configured to non-invasively measure a physiological parameter of a user, the user-worn device comprising:</p>	<p>Apple Watch Series 6 is a user-worn device configured to non-invasively measure a physiological parameter of a user.</p> <p>Apple acknowledges that Apple Watch Series 6 is worn on the wrist and non-invasively measures—with “an optical sensor” that “uses red and infrared light”—physiological parameters such as “heart rate” by using the Heart Rate app on the device and “blood oxygen” (i.e., oxygen saturation) level by using the Blood Oxygen app on the device.</p> <p><i>See, e.g.,</i> <a href="https://www.apple.com/newsroom/2020/09/apple-watch-series-6-delivers-breakthrough-wellness-and-fitness-capabilities">https://www.apple.com/newsroom/2020/09/apple-watch-series-6-delivers-breakthrough-wellness-and-fitness-capabilities</a> (last visited Dec. 5, 2022) (Apple’s Sept. 15, 2020 press release announcing Apple Watch Series 6: “Apple today announced Apple Watch Series 6, introducing a revolutionary Blood Oxygen feature that offers users even more insight into their overall wellness . . . .”); <i>id.</i> (excerpted and reproduced below).</p>

Claim 1	Apple Watch Series 6
	<div data-bbox="617 272 1787 841"></div> <p data-bbox="569 899 1822 1040"><i>See, e.g.,</i> <a href="https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027">https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027</a> (last visited Dec. 5, 2022) (explaining “How to take a blood oxygen measurement”: “Make sure that your Apple Watch is snug but comfortable on your wrist.”) (excerpted and reproduced below).</p>

Claim 1	Apple Watch Series 6
	<div data-bbox="720 290 1041 836" data-label="Image"> </div> <div data-bbox="1073 313 1675 350" data-label="Section-Header"> <h3>How to take a blood oxygen measurement</h3> </div> <div data-bbox="1073 370 1688 440" data-label="Text"> <p>You can take a blood oxygen measurement at any time with the Blood Oxygen app.</p> </div> <div data-bbox="1073 459 1705 828" data-label="List-Group"> <ol style="list-style-type: none"> <li>1. Make sure that your Apple Watch is snug but comfortable on your wrist.</li> <li>2. Open the Blood Oxygen app on your Apple Watch.</li> <li>3. Stay still, and make sure your wrist is flat with the Apple Watch facing up.</li> <li>4. Tap Start, then keep your arm steady for 15 seconds.</li> <li>5. Wait. The measurement takes 15 seconds. At the end of the measurement, <i>you will receive the results.</i></li> <li>6. Tap Done.</li> </ol> </div> <div data-bbox="558 911 1837 1023" data-label="Text"> <p><i>See, e.g., <a href="https://support.apple.com/en-us/HT204665">https://support.apple.com/en-us/HT204665</a> (last visited Dec. 5, 2022) (“Wearing your Apple Watch”: “the back of your Apple Watch needs skin contact”; “the sensors will work only if you wear your Apple Watch on the top of your wrist”) (excerpted and reproduced below).</i></p> </div>



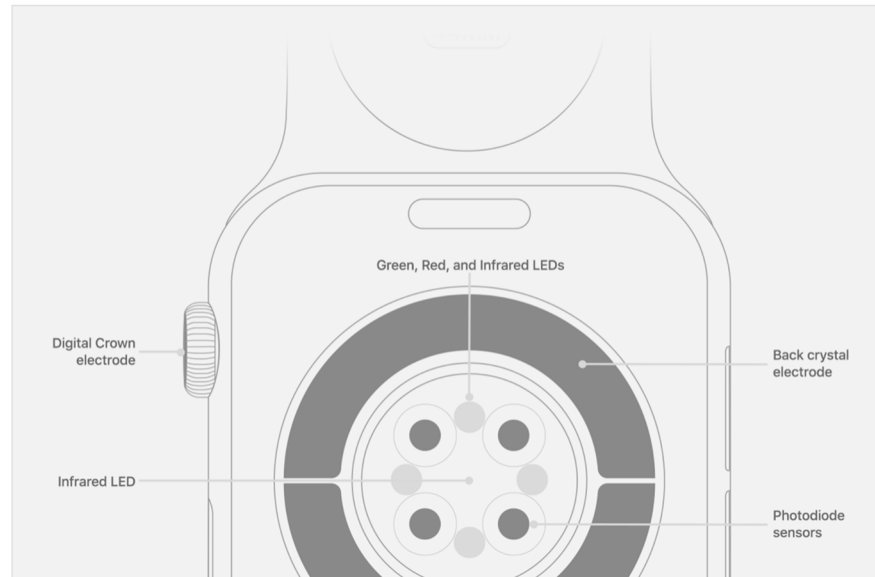
Claim 1	Apple Watch Series 6
	<h2 data-bbox="701 277 1281 329">Wearing your Apple Watch</h2> <p data-bbox="701 354 1698 462">To make sure that you have the best experience, here's some information about getting a good fit when you wear your Apple Watch and being aware of potential skin sensitivities.</p> <h3 data-bbox="701 511 1287 553">A better fit means better readings</h3> <p data-bbox="701 573 1715 691">For best results, the back of your Apple Watch needs skin contact for features like Wrist Detect, the Taptic Engine, and the electrical and optical heart sensors. Wearing your Apple Watch with the right fit—not too tight, not too loose, and with room for your skin to breathe—keeps you comfortable and let the sensors do their jobs.</p> <p data-bbox="701 714 1650 769">You may want to tighten your Apple Watch band for workouts, then loosen it when you're done. In addition, the sensors will work only if you wear your Apple Watch on the top of your wrist.</p> <p data-bbox="701 795 1688 818">Learn more about getting the best results when you <a href="#">use the Blood Oxygen app</a> on Apple Watch Series 6 and Series 7.</p> <div data-bbox="701 857 831 889"> <h4>Too loose</h4>  <p data-bbox="701 1187 1106 1276">If your Apple Watch doesn't stay in place, or the sensors aren't reading your heart rate, tighten the band a bit.</p> </div> <div data-bbox="1207 857 1337 889"> <h4>Just right</h4>  <p data-bbox="1207 1187 1539 1242">Your Apple Watch should be snug but comfortable.</p> </div>


Claim 1	Apple Watch Series 6
	<p data-bbox="573 277 1665 347"><i>See, e.g.,</i> <a href="https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027">https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027</a> (last visited Dec. 5, 2022) (excerpted and reproduced below).</p> <h2 data-bbox="625 396 1308 443">How the Blood Oxygen app works</h2> <p data-bbox="625 467 1797 570">In Apple Watch Series 6 and Series 7, the optical heart sensor has been redesigned to add blood oxygen measurement capabilities. During a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto your wrist. Photodiodes then measure the amount of light reflected back.</p>  <p data-bbox="625 980 1793 1044">Advanced algorithms use this data to calculate the color of your blood. The color determines your blood oxygen level — bright red blood has more oxygen, while dark red blood has less.</p> <p data-bbox="573 1105 1824 1208"><i>See, e.g.,</i> <a href="https://support.apple.com/en-us/HT204666">https://support.apple.com/en-us/HT204666</a> (last visited Dec. 5, 2022) (confirming that the optical heart sensor in Apple Watch uses “photoplethysmography”) (excerpted and reproduced below).</p>

**Claim 1****Apple Watch Series 6****How Apple Watch measures your heart rate**

The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.

The optical heart sensor can also use infrared light. This mode is what Apple Watch uses when it measures your heart rate in the background, and for heart rate notifications. Apple Watch uses green LED lights to measure your heart rate during workouts and Breathe sessions, and to calculate walking average and Heart Rate Variability (HRV).



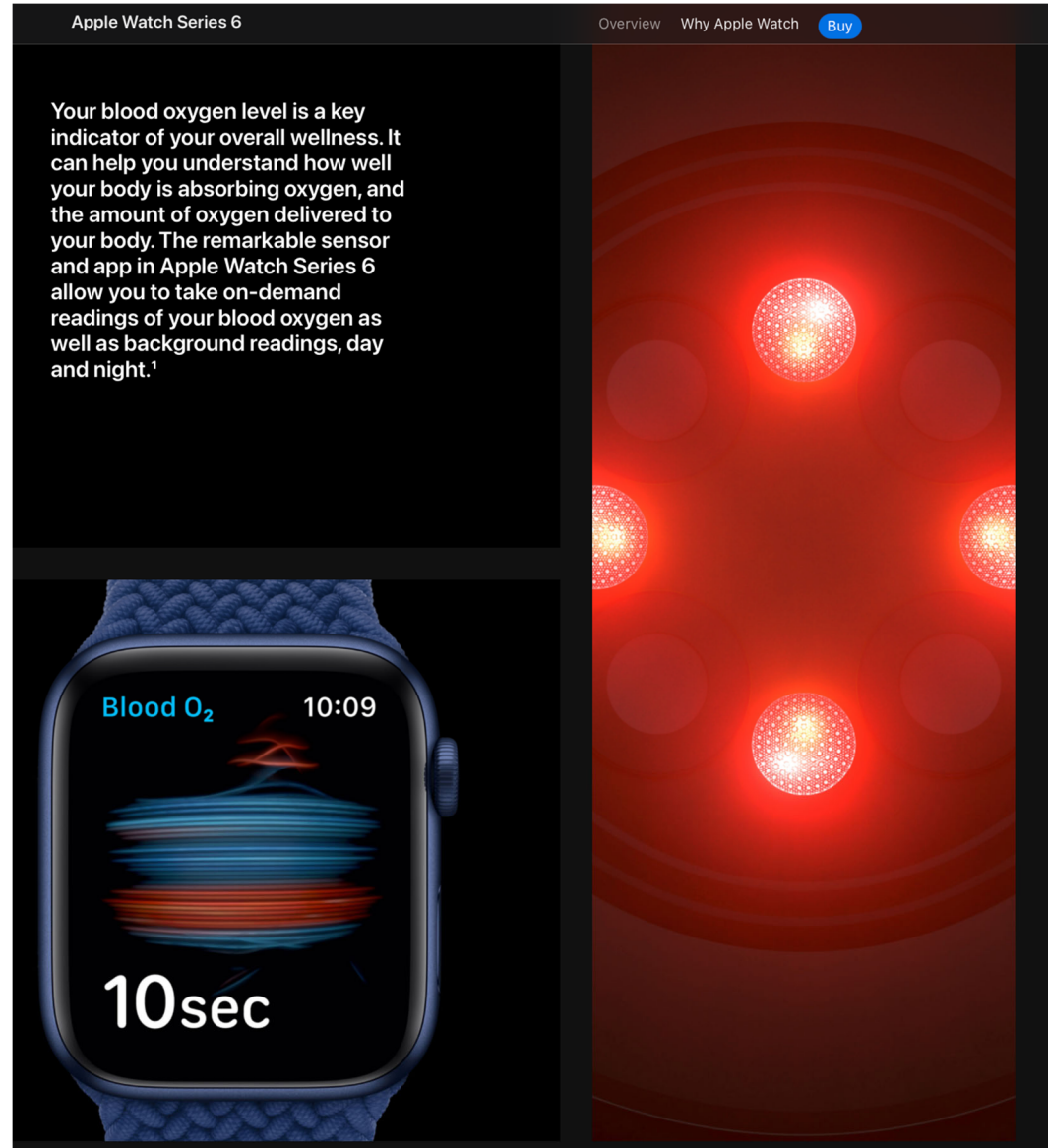
Claim 1	Apple Watch Series 6
	<p><i>See, e.g.</i>, Apple’s “It Already Does That” Advertisement, <a href="https://www.youtube.com/watch?v=zRVklyB4tFA">https://www.youtube.com/watch?v=zRVklyB4tFA</a> (last visited Dec. 5, 2022) (depicting users wearing Apple Watch Series 6 on their wrists, with the watch non-invasively measuring physiological parameters such as heart rate and oxygen saturation; admitting that Apple Watch Series 6 has “an optical sensor” that “uses red and infrared light” to measure “heart rate” and “blood oxygen level”) (excerpted and reproduced below); <a href="https://www.apple.com/105/media/us/apple-watch-series-6/2020/7f870ecd-39d9-4ae4-9d90-3f1ff588df98/films/it-already-does-that/apple-watch-series-6-it-already-does-that-tpl-us-2020_16x9.m3u8">https://www.apple.com/105/media/us/apple-watch-series-6/2020/7f870ecd-39d9-4ae4-9d90-3f1ff588df98/films/it-already-does-that/apple-watch-series-6-it-already-does-that-tpl-us-2020_16x9.m3u8</a> (last visited Aug. 26, 2022) (same).</p> 

**Claim 1**



**Apple Watch Series 6**




Claim 1	Apple Watch Series 6
	<p><i>See, e.g.,</i> <a href="https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/">https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/</a> (last visited Dec. 5, 2022) (“The remarkable new sensor and app in Apple Watch Series 6 allow you to take on-demand readings of your blood oxygen as well as background readings, day and night.”) (excerpted and reproduced below).</p>





Claim 1	Apple Watch Series 6
	<p>See, e.g., <a href="https://support.apple.com/en-us/HT204666">https://support.apple.com/en-us/HT204666</a> (last visited Dec. 5, 2022) (displaying the “Heart Rate” app on Apple Watch Series 6 and noting that users can “can check [their] heart rate any time using the Heart Rate app.”) (excerpted and reproduced below).</p> <h2 data-bbox="663 467 1608 521">Monitor your heart rate with Apple Watch</h2> <p data-bbox="663 557 1608 634">Learn how Apple Watch measures your heart rate, and get tips for a more accurate reading.</p> <div data-bbox="663 711 735 782">  </div> <h3 data-bbox="779 716 1329 760">How to check your heart rate</h3> <p data-bbox="663 834 1381 1065">You can check your heart rate any time using the Heart Rate app. Open the app, then wait for Apple Watch to measure your heart rate. You can also view your resting, walking, breathe, workout, and recovery rates throughout the day. To easily open the app, <a href="#">add the Heart Rate complication to your watch face</a> or <a href="#">add the Heart Rate app to the Dock</a>.</p> <p data-bbox="663 1094 1381 1247">You can also <a href="#">turn on heart rate notifications</a>, so you know if your heart rate remains above or below a chosen beats per minute (BPM), or to occasionally check for an irregular heart rhythm.</p> <p data-bbox="663 1281 1373 1349">Irregular rhythm notifications are available only with watchOS 5.1.2 or later. To enable irregular rhythm notifications, the notifications must be</p> <div data-bbox="1436 826 1734 1333">  </div>



Claim 1	Apple Watch Series 6
	<p><i>See, e.g.,</i> <a href="https://web.archive.org/web/20220610053603/https://support.apple.com/guide/watch/heart-rate-apda88aefe4c/watchos">https://web.archive.org/web/20220610053603/https://support.apple.com/guide/watch/heart-rate-apda88aefe4c/watchos</a> (last visited Dec. 5, 2022) (“Check your heart rate on Apple Watch”; “Your Apple Watch continues measuring your heart rate as long as you’re wearing it.”) (excerpted and reproduced below).</p> <p style="text-align: center;"><b>See your heart rate</b></p> <div data-bbox="703 625 1039 1006" data-label="Figure"> </div> <p>Open the Heart Rate app  on your Apple Watch to view your current heart rate, resting rate, and walking average rate.</p> <p>Your Apple Watch continues measuring your heart rate as long as you’re wearing it.</p> <p><i>See, e.g.,</i> <a href="https://support.apple.com/en-us/HT204666">https://support.apple.com/en-us/HT204666</a> (last visited Dec. 5, 2022) (showing that a user’s “Heart Rate” rate is captured over time and that Apple provides “Heart Rate” trends over time to the user on an iPhone) (excerpted and reproduced below).</p>

**Claim 1****Apple Watch Series 6****When Apple Watch measures your heart rate**


When you use the Workout app, Apple Watch measures your heart rate continuously during the workout and for 3 minutes after the workout ends to determine a workout recovery rate. If you don't see your heart rate, [check your settings](#).

This information, as well as other data it collects, helps Apple Watch estimate how many calories you've burned. In addition, Apple Watch measures your heart rate throughout the day when you're still, and periodically when you're walking (Apple Watch Series 1 or later). Since Apple Watch takes these background readings based on your activity, the time between these measurements will vary. Apple Watch also calculates a daily resting rate and walking average by correlating background heart rate readings with accelerometer data when sufficient background readings are available. You



*See, e.g.,*

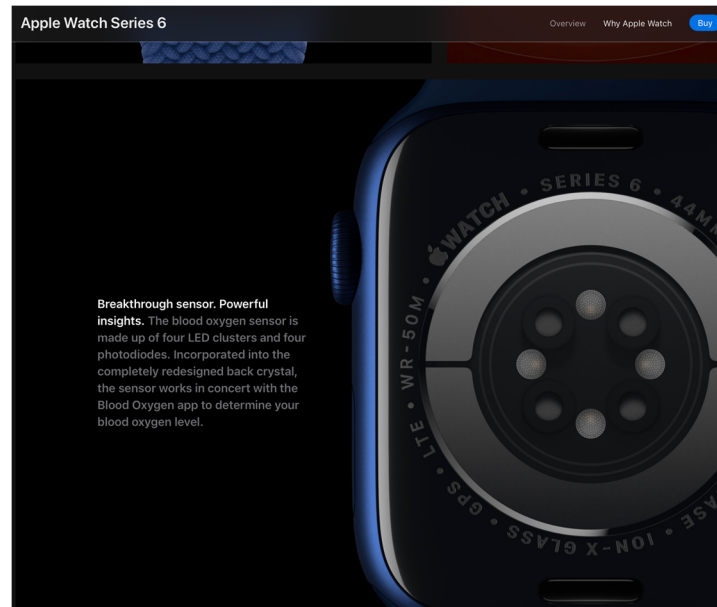
<https://web.archive.org/web/20220610053603/https://support.apple.com/guide/watch/heart-rate-apda88aefe4c/watchos> (last visited Dec. 5, 2022) (“See a graph of your heart rate data” and “You can see your heart rate over the last hour, day, week, month, or year. Tap Show More Heart Rate Data and you can also see the range of your heart rate during the selected time period; your

Claim 1	Apple Watch Series 6
	<p data-bbox="569 277 1724 347">resting, walking average, workout, sleep, and Breathe rates; and any high or low heart rate notifications.”) (excerpted and reproduced below).</p> <div data-bbox="728 396 1043 753"></div> <hr data-bbox="728 800 1719 803"/> <p data-bbox="728 854 1337 894"><b>See a graph of your heart rate data</b></p> <ol data-bbox="728 919 1566 1057" style="list-style-type: none"><li>1. Open the Health app on your iPhone.</li><li>2. Tap Browse at the bottom right, tap Heart, then tap Heart Rate.</li><li>3. To add Heart Rate to your Summary, swipe up, then tap Add to Favorites.</li></ol> <p data-bbox="728 1084 1703 1222">You can see your heart rate over the last hour, day, week, month, or year. Tap Show More Heart Rate Data and you can also see the range of your heart rate during the selected time period; your resting, walking average, workout, sleep, and Breathe rates; and any high or low heart rate notifications.</p>

Claim 1	Apple Watch Series 6
[1A] at least three light emitting diodes (LEDs);	<p>Apple Watch Series 6 includes at least three light emitting diodes (LEDs).</p> <p>The optical (or “blood oxygen”) sensor on the back of Apple Watch Series 6 has “four LED clusters”—or four sets of LED emitters—comprising “[g]reen, red, and infrared LEDs,” where at least one LED (e.g., the red LED) is configured to emit light at a first wavelength (e.g., red), a second LED (e.g., the green LED) is configured to emit light at a second wavelength (e.g., green), and a third LED (e.g., the infrared LED) is configured to emit light at a third wavelength (e.g., infrared).</p> <p><i>See, e.g.,</i> <a href="https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/">https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/</a> (last visited Dec. 5, 2022) (“The new blood oxygen sensor is made up of four LED clusters and four photodiodes. Incorporated into the completely redesigned back crystal, this new sensor works in concert with the Blood Oxygen app to determine your blood oxygen level.”) (excerpted and reproduced below).</p>

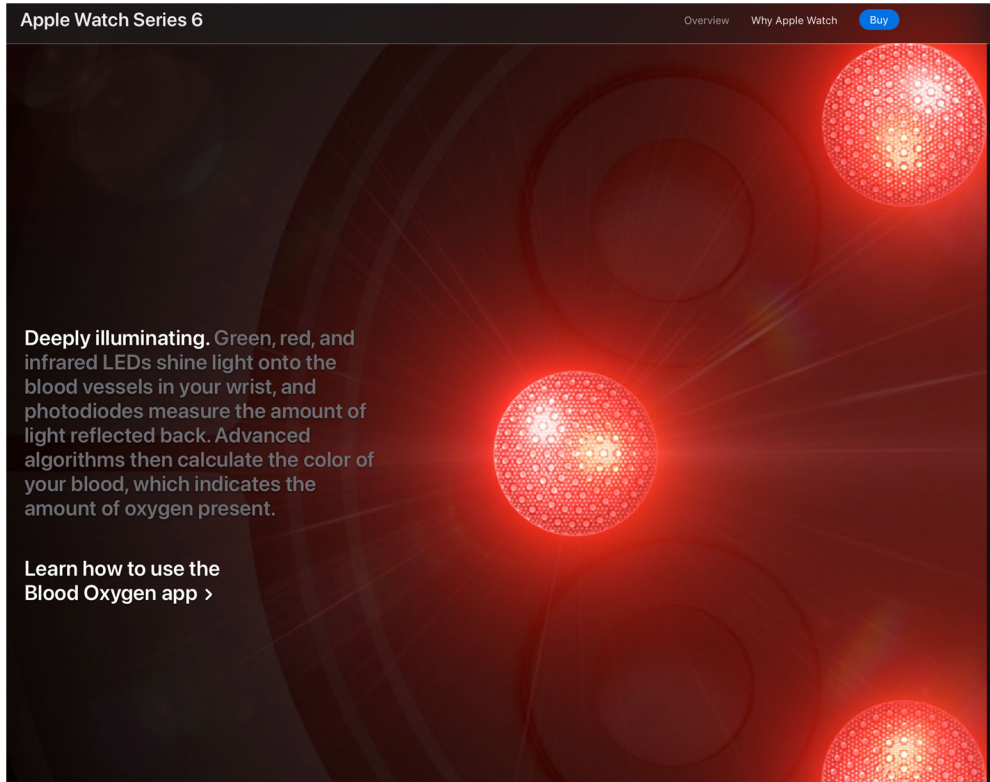
## Claim 1


## Apple Watch Series 6

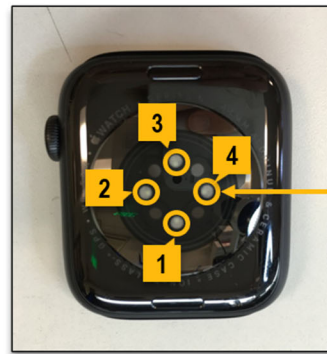


See, e.g., <https://www.apple.com/newsroom/2020/09/apple-watch-series-6-delivers-breakthrough-wellness-and-fitness-capabilities> (last visited Dec. 5, 2022) (Apple’s Sept. 15, 2020 press release announcing Apple Watch Series 6: “To compensate for natural variations in the skin and improve accuracy, the Blood Oxygen sensor employs four clusters of green, red, and infrared LEDs, along with the four photodiodes on the back crystal of Apple Watch, to measure light reflected back from blood. Apple Watch then uses an advanced custom algorithm built into the Blood Oxygen app, which is designed to measure blood oxygen between 70 percent and 100 percent. On-demand measurements can be taken while the user is still, and periodic background measurements occur when they are inactive, including during sleep. All data will be visible in the Health app, and the user will be able to track trends over time to see how their blood oxygen level changes.”).

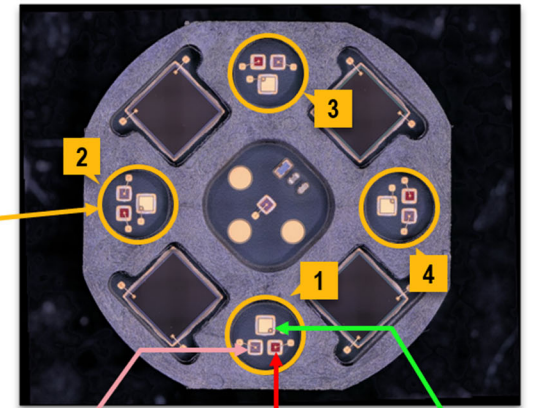
See, e.g., <https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/> (last visited Dec. 5, 2022) (“Green, red, and infrared LEDs shine light onto the blood

Claim 1	Apple Watch Series 6
	<p>vessels in your wrist, and photodiodes measure the amount of light reflected back. Advanced algorithms then calculate the color of your blood, which indicates the amount of oxygen present.”) (excerpted and reproduced below).</p>  <p>See, e.g., <a href="https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027">https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027</a> (last visited Dec. 5, 2022) (“In Apple Watch Series 6 and Series 7, the optical heart sensor has been redesigned to add blood oxygen measurement capabilities. During a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto your wrist. Photodiodes then measure the amount of light reflected back. Advanced algorithms use this data to</p>

Claim 1	Apple Watch Series 6
	<p>calculate the color of your blood. The color determines your blood oxygen level — bright red blood has more oxygen, while dark red blood has less.”) (excerpted and reproduced below).</p> <p><b>How the Blood Oxygen app works</b></p> <p>In Apple Watch Series 6 and Series 7, the optical heart sensor has been redesigned to add blood oxygen measurement capabilities. During a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto your wrist. Photodiodes then measure the amount of light reflected back.</p>  <p>Advanced algorithms use this data to calculate the color of your blood. The color determines your blood oxygen level — bright red blood has more oxygen, while dark red blood has less.</p> <p>For example, a teardown of Apple Watch Series 6 confirms that it contains four emitters (i.e., sets of LEDs) spaced apart, each emitter (set of LEDs) including three LEDs (red, infrared (“IR”), and green):</p>

**Claim 1****Apple Watch Series 6**

*Four Emitters (Sets of LEDs),  
Spaced Apart*



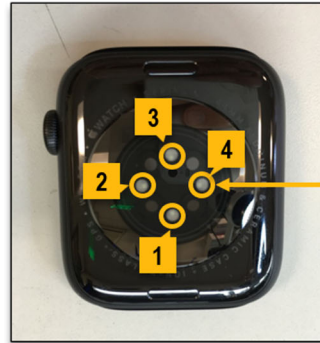
Infrared LED

Red LED

Green LED

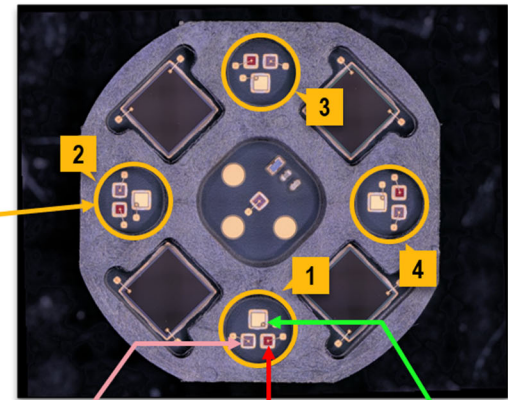
Further, for example, a teardown of Apple Watch Series 6 shows the location of the first set of LEDs, as well as the individual LED configured to emit light at a first wavelength (e.g., red) and the individual LED configured to emit light at a second wavelength (e.g., green):



**Claim 1****Apple Watch Series 6**

**Four Emitters** (Sets of LEDs),  
**Spaced Apart**

Each Emitter (Set) Including at  
least **One LED of a First  
Wavelength** and at least **One  
LED of a Second Wavelength**

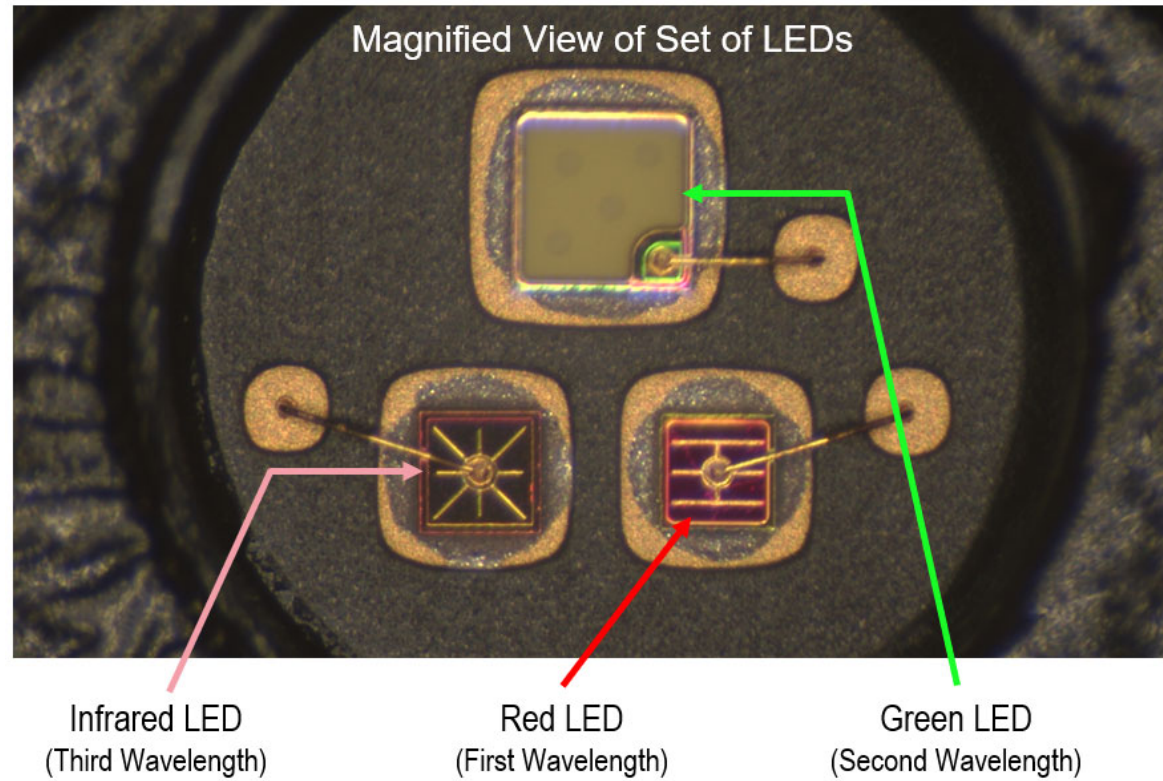


Infrared LED  
(Third Wavelength)

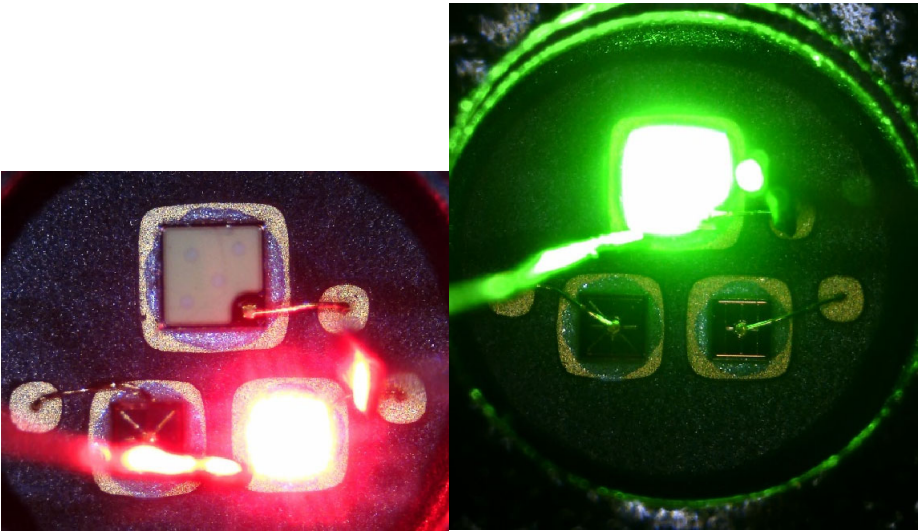
Red LED  
(First Wavelength)

Green LED  
(Second Wavelength)

A teardown of Apple Watch Series 6 shows a magnified view of one emitter (set of LEDs), including the individual LED configured to emit light at a first wavelength (e.g., red) and the individual LED configured to emit light at a second wavelength (e.g., green):

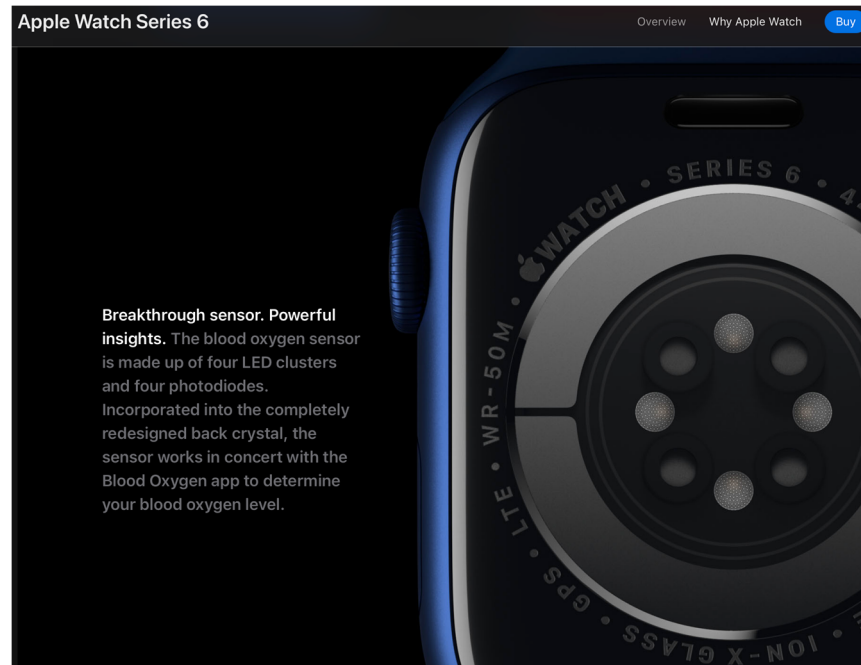
**Claim 1****Apple Watch Series 6**

A teardown of Apple Watch Series 6 shows a magnified view of one emitter (set of LEDs), with the red LED emitting light at a first wavelength (red, below left) and the green LED emitting light at a second wavelength (green, below right):

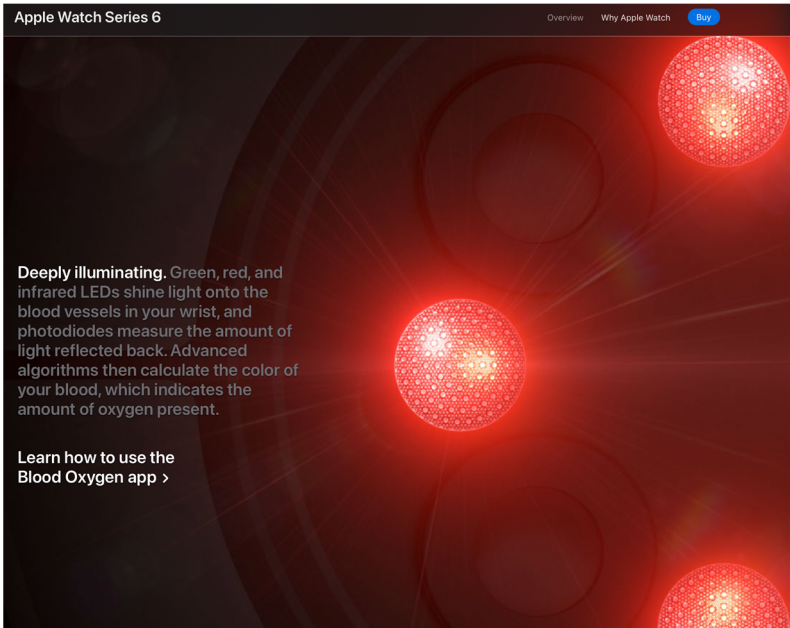
Claim 1	Apple Watch Series 6
	
<p>[1B] at least three photodiodes arranged on an interior surface of the user-worn device and configured to receive light attenuated by tissue of the user;</p>	<p>Apple Watch Series 6 includes four photodiodes (or detectors) arranged on an interior surface of (or within) the user-worn device and configured to receive light attenuated by tissue of the user.</p> <p>For example, Apple acknowledges that the device has “four photodiodes.... [i]ncorporated into the ... back crystal,” which “measure the amount of light reflected back” from “blood vessels in [the user’s] wrist.”</p> <p><i>See, e.g.,</i> <a href="https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/">https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/</a> (last visited Dec. 5, 2022) (“The new blood oxygen sensor is made up of four LED clusters and four photodiodes. Incorporated into the completely redesigned back crystal, this new sensor works in concert with the Blood Oxygen app to determine your blood oxygen level.”) (excerpted and reproduced below).</p>

## Claim 1

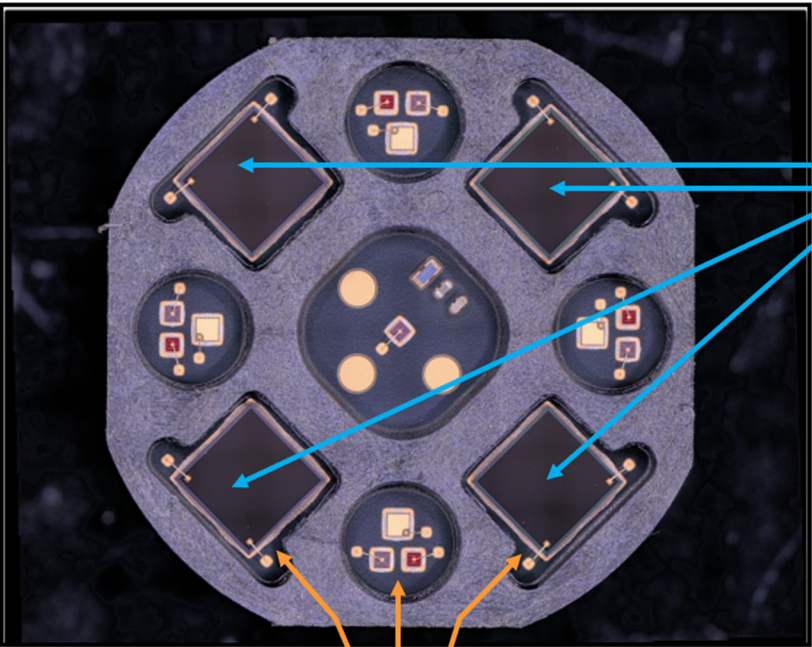
## Apple Watch Series 6



See, e.g., <https://www.apple.com/newsroom/2020/09/apple-watch-series-6-delivers-breakthrough-wellness-and-fitness-capabilities> (last visited Dec. 5, 2022) (Apple’s Sept. 15, 2020 press release announcing Apple Watch Series 6: “To compensate for natural variations in the skin and improve accuracy, the Blood Oxygen sensor employs four clusters of green, red, and infrared LEDs, along with the four photodiodes on the back crystal of Apple Watch, to measure light reflected back from blood. Apple Watch then uses an advanced custom algorithm built into the Blood Oxygen app, which is designed to measure blood oxygen between 70 percent and 100 percent. On-demand measurements can be taken while the user is still, and periodic background measurements occur when they are inactive, including during sleep. All data will be visible in the Health app, and the user will be able to track trends over time to see how their blood oxygen level changes.”).

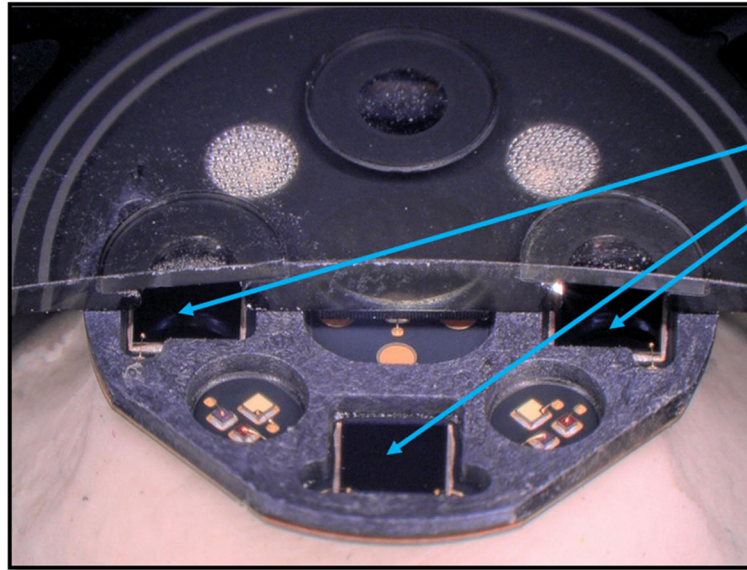
Claim 1	Apple Watch Series 6
	<p>See, e.g., <a href="https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/">https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/</a> (last visited Dec. 5, 2022) (“Green, red, and infrared LEDs shine light onto the blood vessels in your wrist, and photodiodes measure the amount of light reflected back. Advanced algorithms then calculate the color of your blood, which indicates the amount of oxygen present.”) (excerpted and reproduced below).</p>  <p>The screenshot shows the Apple Watch Series 6 product page. At the top, it says 'Apple Watch Series 6' with links for 'Overview', 'Why Apple Watch', and a 'Buy' button. The main visual is a dark red background with a diagram of a wrist. Three glowing red spheres represent LEDs shining light onto the wrist. Text on the left reads: 'Deeply illuminating. Green, red, and infrared LEDs shine light onto the blood vessels in your wrist, and photodiodes measure the amount of light reflected back. Advanced algorithms then calculate the color of your blood, which indicates the amount of oxygen present.' Below this, it says 'Learn how to use the Blood Oxygen app &gt;'. The diagram shows light rays from the LEDs hitting the wrist and reflecting back to the photodiodes.</p> <p>For example, a teardown of Apple Watch Series 6 shows the four photodiodes arranged on an interior surface of the device and configured to receive light after the light has been attenuated by the tissue:</p>



Claim 1	Apple Watch Series 6
	 <p data-bbox="1472 399 1785 532">At Least Three (Four) Photodiodes Arranged on an Interior Surface of the User- Worn Device</p> <p data-bbox="936 979 1104 1008">Interior Surface</p> <p>The image is a circular micrograph showing a sensor array. It features four large, dark, diamond-shaped regions arranged in a square pattern. Between these diamond shapes are four smaller circular regions, each containing several small, colorful square components. Four blue arrows originate from a text box on the right and point to the four diamond-shaped regions. Three orange arrows originate from a text box at the bottom and point to the four diamond-shaped regions, with the text 'Interior Surface' positioned below them.</p>

**Claim 1**

**Apple Watch Series 6**

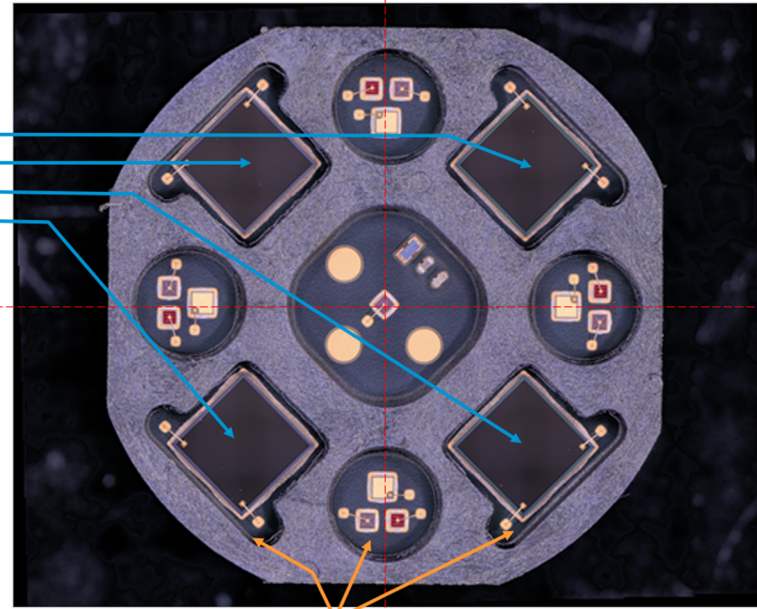


At Least Three Photodiodes  
Arranged on an Interior Surface  
of the User-Worn Device

A teardown of Apple Watch Series 6 also shows, for example, the four photodiodes are arranged in a quadrant arrangement on an interior surface of the device and configured to receive light at different quadrants of a user's tissue after the light has been attenuated by the tissue:

**Claim 1****Apple Watch Series 6**

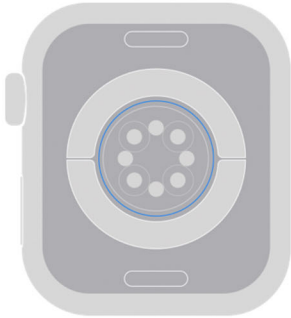
Four Photodiodes  
Arranged on the  
Interior Surface in a  
Quadrant  
Arrangement



Interior  
Surface

Apple also acknowledges that “[d]uring a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto [the user’s] wrist. Photodiodes then measure the amount of light reflected back.” Thus, the photodiodes of Apple Watch Series 6 are configured to receive light after it has been attenuated by the user’s tissue. *See, e.g.,* <https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027> (last visited Dec. 5, 2022) (“In Apple Watch Series 6 and Series 7, the optical heart sensor has been redesigned to add blood oxygen measurement capabilities. During a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto your wrist. Photodiodes then measure the amount of light reflected back. Advanced algorithms use this data to calculate the



Claim 1	Apple Watch Series 6
	<p>color of your blood. The color determines your blood oxygen level — bright red blood has more oxygen, while dark red blood has less.”) (excerpted and reproduced below).</p> <p><b>How the Blood Oxygen app works</b></p> <p>In Apple Watch Series 6 and Series 7, the optical heart sensor has been redesigned to add blood oxygen measurement capabilities. During a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto your wrist. Photodiodes then measure the amount of light reflected back.</p>  <p>Advanced algorithms use this data to calculate the color of your blood. The color determines your blood oxygen level — bright red blood has more oxygen, while dark red blood has less.</p>
<p>[1C] a protrusion arranged over the interior surface, the protrusion comprising a convex surface and a plurality of openings extending through the protrusion and positioned over the three photodiodes, the openings</p>	<p>Apple Watch Series 6 includes a protrusion arranged over (or extending over, or above) the four photodiodes and the interior surface on which they are arranged. The protrusion has a convex surface, and a plurality of openings extend through the protrusion and are positioned over the photodiodes.</p> <p>As shown below, Apple Watch Series 6 includes a protrusion comprising a convex surface, the protrusion arranged over (or extending over, or above) the photodiodes and the interior surface on which they are arranged. <i>See, e.g.,</i> <a href="https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/">https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/</a> (last</p>

Claim 1	Apple Watch Series 6
<p>each comprising an opaque lateral surface, the plurality of openings configured to allow light to reach the photodiodes, the opaque lateral surface configured to avoid light piping through the protrusion; and</p>	<p>visited Dec. 5, 2022) (showing a protrusion comprising a convex surface is arranged over (or extending over, or above) the “blood oxygen sensor,” which “is made up of four LED clusters and four photodiodes” and is “[i]ncorporated into the completely redesigned back crystal” on the back of the device) (excerpted and reproduced below).</p> <div data-bbox="569 425 1268 1187"> <p>The image is a teardown view of the back of an Apple Watch Series 6. It shows the internal components, including the blood oxygen sensor (LED clusters and photodiodes) and the back crystal. A green line points to a protrusion on the back crystal that covers the blood oxygen sensor. The text 'Apple Watch Series 6' is visible at the top of the image. The text 'GPS • 50M • WATER RESISTANT' is visible on the left side of the back crystal. The text 'ION-X GLASS • CERAMIC CASE' is visible on the right side of the back crystal.</p> </div> <p>Protrusion Comprising Convex Surface Arranged Over Interior Surface/Photodiodes</p> <p>A teardown shows, for example, Apple Watch Series 6 includes a protrusion comprising a convex surface, the protrusion arranged over (or extending over, or above) the photodiodes and the interior surface on which they are arranged.</p>

Claim 1	Apple Watch Series 6
	<div data-bbox="655 284 1749 818" data-label="Image"> <p>Protrusion Comprising Convex Surface Arranged Over Interior Surface/Photodiodes</p> <p>Convex Surface</p> <p>Interior Surface</p> <p>Photodiodes On Interior Surface</p> </div> <p>The convex surface of the Apple Watch Series 6 protrusion is an outermost surface configured to contact the tissue of the user and conform the tissue into a concave shape. <i>See, e.g.,</i> <a href="https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027">https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027</a> (last visited Dec. 5, 2022) (explaining that “the back of your Apple Watch needs to be touching your wrist”; “Make sure that the back of your Apple Watch is flush with the top of your wrist”) (excerpted and reproduced below).</p>

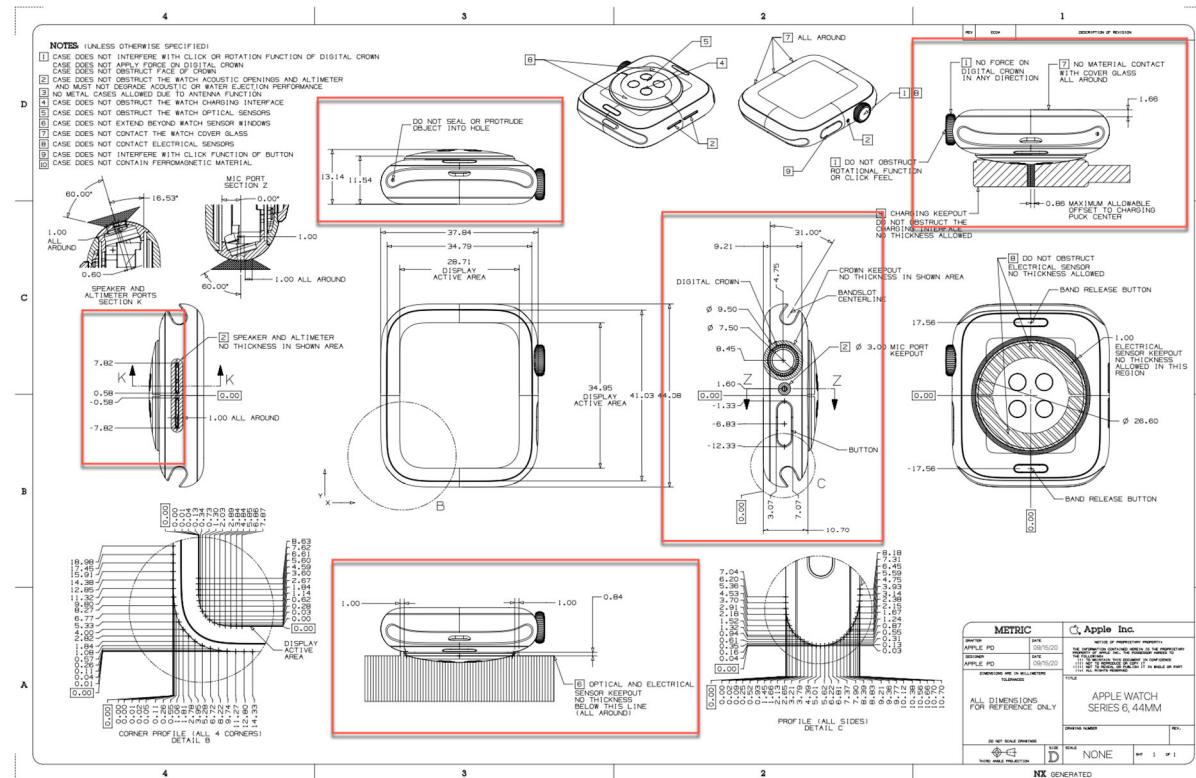
Claim 1	Apple Watch Series 6
	<div data-bbox="701 336 1190 381" data-label="Section-Header"> <h3>How to get the best results</h3> </div> <div data-bbox="697 401 1337 821" data-label="List-Group"> <ol style="list-style-type: none"> <li>1. Rest your arms on a table or in your lap while you take a measurement. Keep your wrist and palm down and flat, and hold as still as you can.</li> <li>2. Make sure that your Apple Watch isn't loose on your wrist. The <b>band should be snug but comfortable</b>, and the back of your Apple Watch needs to be touching your wrist.</li> <li>3. Make sure that the back of your Apple Watch is flush with the top of your wrist. If your wrist bones interfere with this, move your watch 1 to 2 inches up your arm away from your wrist bone.</li> </ol> </div> <div data-bbox="1360 303 1690 854" data-label="Image"> </div> <div data-bbox="560 907 1845 1127" data-label="Text"> <p>Various Apple materials show the Apple Watch Series 6 includes a protrusion comprising a convex surface arranged over (or extending over, or above) the photodiodes and interior surface. See, e.g., Apple Watch Series 6 3D Model, <a href="https://www.apple.com/105/media/us/apple-watch-series-6/2020/7f870ecd-39d9-4ae4-9d90-3f1ff588df98/quick-look/gps-cellular/modern/apple-watch-series-6.usdz">https://www.apple.com/105/media/us/apple-watch-series-6/2020/7f870ecd-39d9-4ae4-9d90-3f1ff588df98/quick-look/gps-cellular/modern/apple-watch-series-6.usdz</a> (last visited Dec. 5, 2022) (excerpted and reproduced below).</p> </div>

Claim 1	Apple Watch Series 6
	<div data-bbox="959 280 1423 732" data-label="Image"> </div> <p data-bbox="564 808 1766 885">See, e.g., <a href="https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/">https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/</a> (last visited Dec. 5, 2022) (excerpted and reproduced below).</p> <div data-bbox="984 915 1404 1346" data-label="Image"> </div>

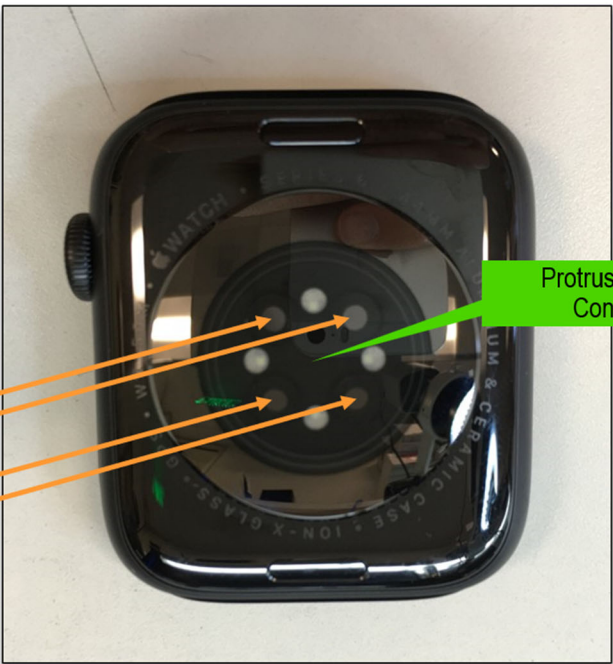
### Claim 1

## Apple Watch Series 6

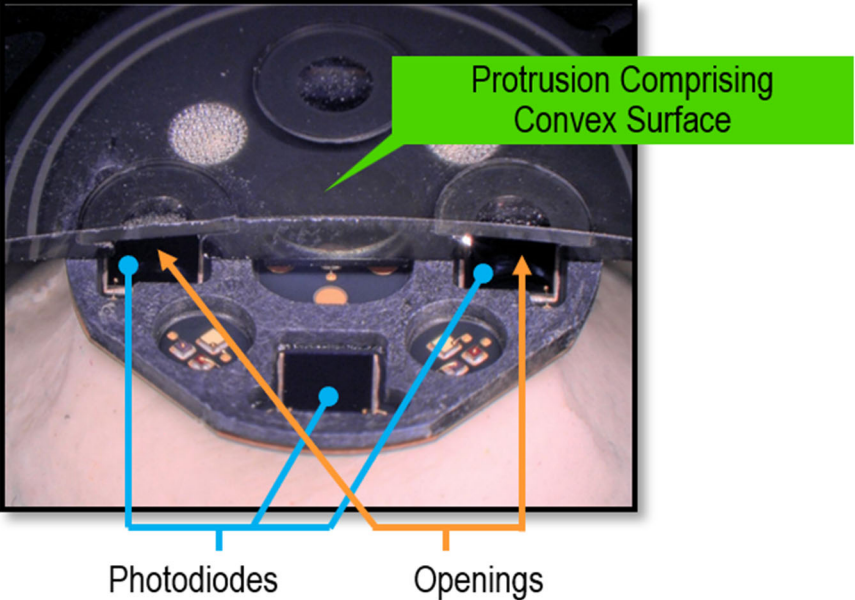
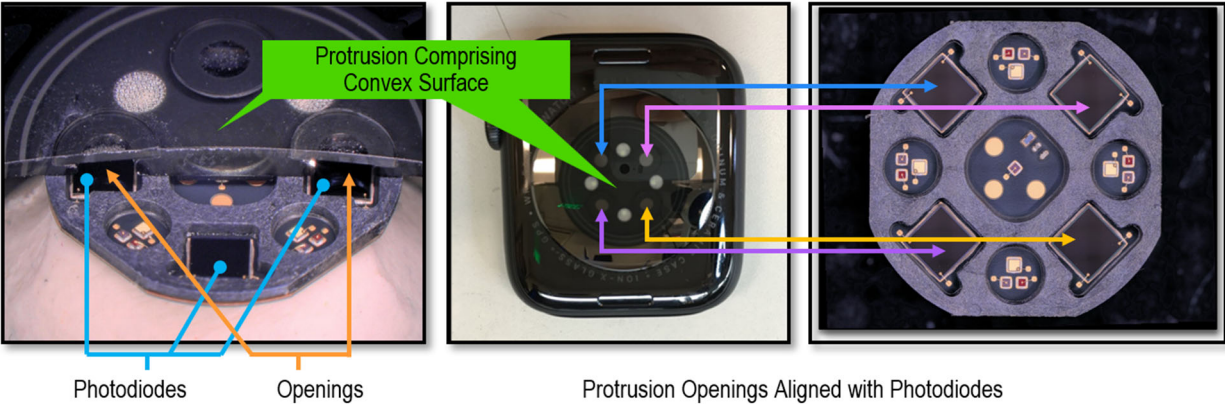
See, e.g., <https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf> (last visited Dec. 5, 2022) (“Device Dimensional Drawings” for Apple Watch Series 6 at pages 370-371, showing and quantifying the protrusion) (excerpted and reproduced below).



A teardown confirms that the protrusion comprising a convex surface of Apple Watch Series 6 includes a plurality of openings extending through the protrusion and aligned with the

Claim 1	Apple Watch Series 6
	<p data-bbox="569 277 1822 350">photodiodes, as shown below. The plurality of openings in the protrusion are configured to allow light to reach the underlying photodiodes, as shown below.</p> <div data-bbox="627 397 1770 1057"><p data-bbox="1486 659 1724 716">Protrusion Comprising Convex Surface</p><p data-bbox="636 800 894 894">Openings Extending Through Protrusion, Aligned with Photodiodes</p></div>

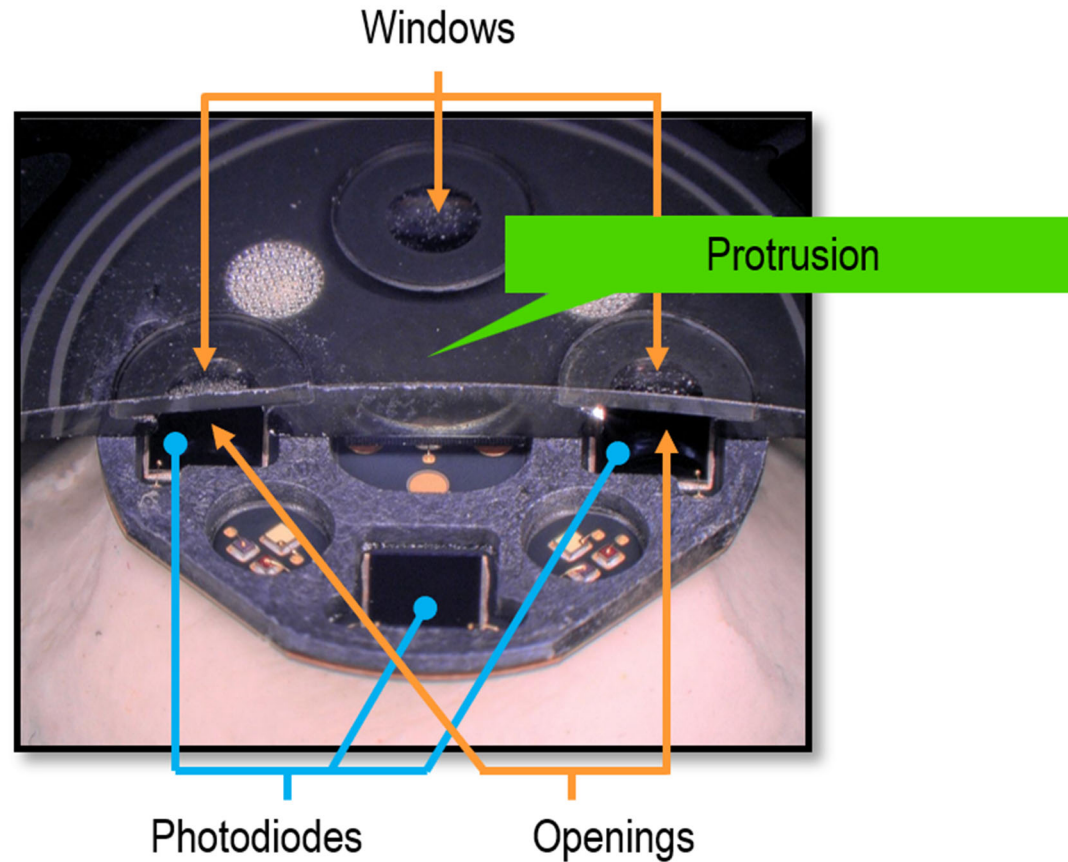


Claim 1	Apple Watch Series 6
	 <p>Protrusion Comprising Convex Surface</p> <p>Photodiodes</p> <p>Openings</p>  <p>Protrusion Comprising Convex Surface</p> <p>Photodiodes</p> <p>Openings</p> <p>Protrusion Openings Aligned with Photodiodes</p>




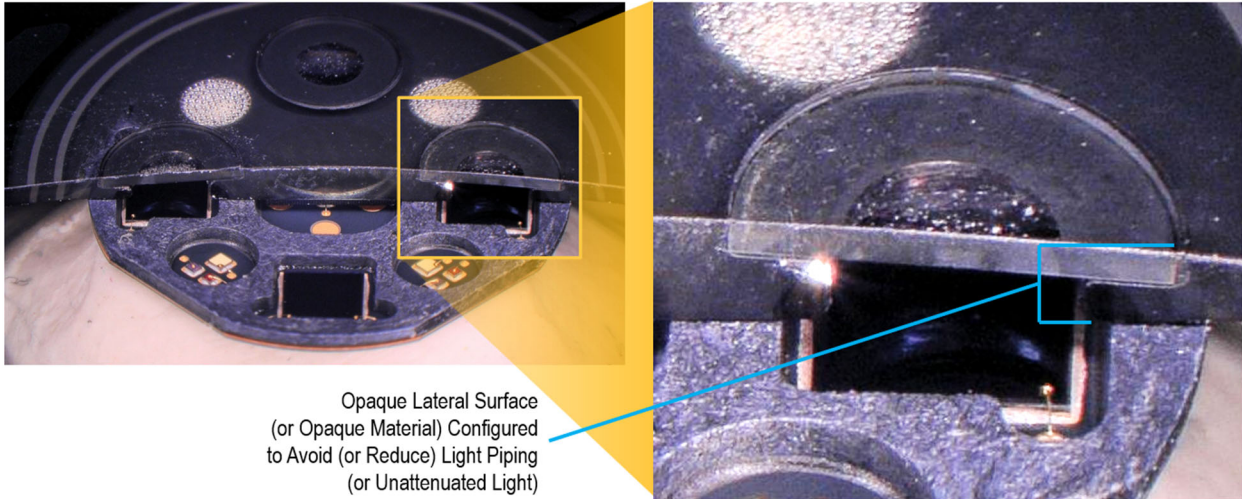
**Claim 1****Apple Watch Series 6**

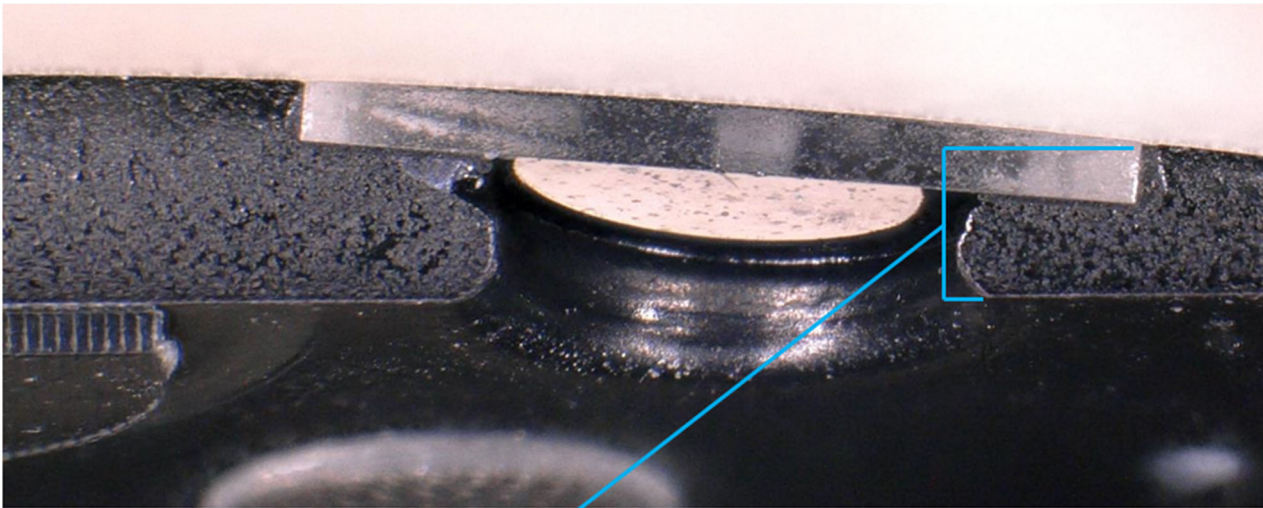
Included within (or extending across) each opening of Apple Watch Series 6 is a window (or optically transmissive material, or optically transparent material), as shown in the teardown below.

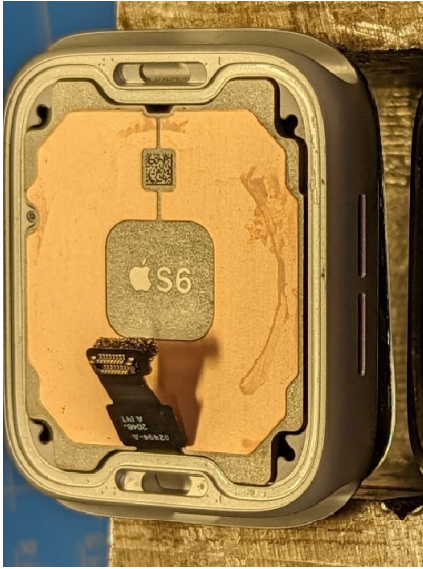


In ITC Investigation No. 337-TA-1276 (the “ITC Investigation”), Masimo accuses the “Apple Watch Series 6,” “Apple Watch Series 7,” and “Next-Generation Apple Watches” of infringing, among other claims and patents, Claim 12 of the ’501 Patent. *Masimo Corp. et al. v. Apple Inc.*,

Claim 1	Apple Watch Series 6
	<p data-bbox="569 277 1833 565">Inv. No. 337-TA-1276, Doc. ID 778396 (Corrected, Redacted (Public) Initial Post-Hearing Brief), 37 (USITC Aug. 22, 2022). Claim 12 depends from Claim 1 of the '501 Patent. Specifically, in the ITC Investigation, Masimo asserts Apple Watch Series 6 (and other accused devices) include “openings each comprising an opaque lateral surface, the plurality of openings configured to allow light to reach the photodiodes, the opaque lateral surface configured to avoid light piping through the protrusion” because each device includes openings with “Two-Step Opaque PVD Coating + Opaque Ink” to avoid light piping through the protrusion. <i>Id.</i>, 63 (excerpted and reproduced below).</p> <div data-bbox="911 602 1472 1182"></div> <p data-bbox="940 1192 1451 1390">Openings Comprising Opaque Lateral Surface/Opaque Material (Two-Step Opaque PVD Coating + Opaque Ink) Configured to Avoid Light Piping Through the Protrusion</p>

Claim 1	Apple Watch Series 6
	<p data-bbox="573 315 1814 418">In the ITC Investigation, Apple did not dispute that its accused products, including Apple Watch Series 6, include “openings each comprising an opaque lateral surface, ... the opaque lateral surface configured to avoid light piping through the protrusion.” <i>Id.</i>, 62-64.</p> <p data-bbox="573 461 1814 565">A teardown of Apple Watch Series 6 shows, for example, that the openings each include an opaque lateral surface (or opaque material or dark coating) that is configured to avoid (or reduce) light piping (or unattenuated light).</p> <div data-bbox="583 605 1818 1101"><p data-bbox="848 992 1121 1094">Opaque Lateral Surface (or Opaque Material) Configured to Avoid (or Reduce) Light Piping (or Unattenuated Light)</p></div>

Claim 1	Apple Watch Series 6
	 <p data-bbox="625 808 1008 958">Opaque Lateral Surface (or Opaque Material) Configured to Avoid (or Reduce) Light Piping (or Unattenuated Light)</p> <p data-bbox="573 1015 1829 1161">As shown in the images above, the opaque lateral surface (or opaque material, or dark coating) of the openings of Apple Watch Series 6 is configured to avoid (or reduce) light emitted by the LEDs from reaching the photodiodes unless the emitted light has already been attenuated by the user's tissue and reflected back toward the photodiodes.</p>
[1D] one or more processors configured to receive one or more signals from the photodiodes and calculate	Apple Watch Series 6 includes one or more processors configured to receive one or more signals from the photodiodes and calculate a measurement of the physiological parameter (e.g., heart rate and/or oxygen saturation) of the user.

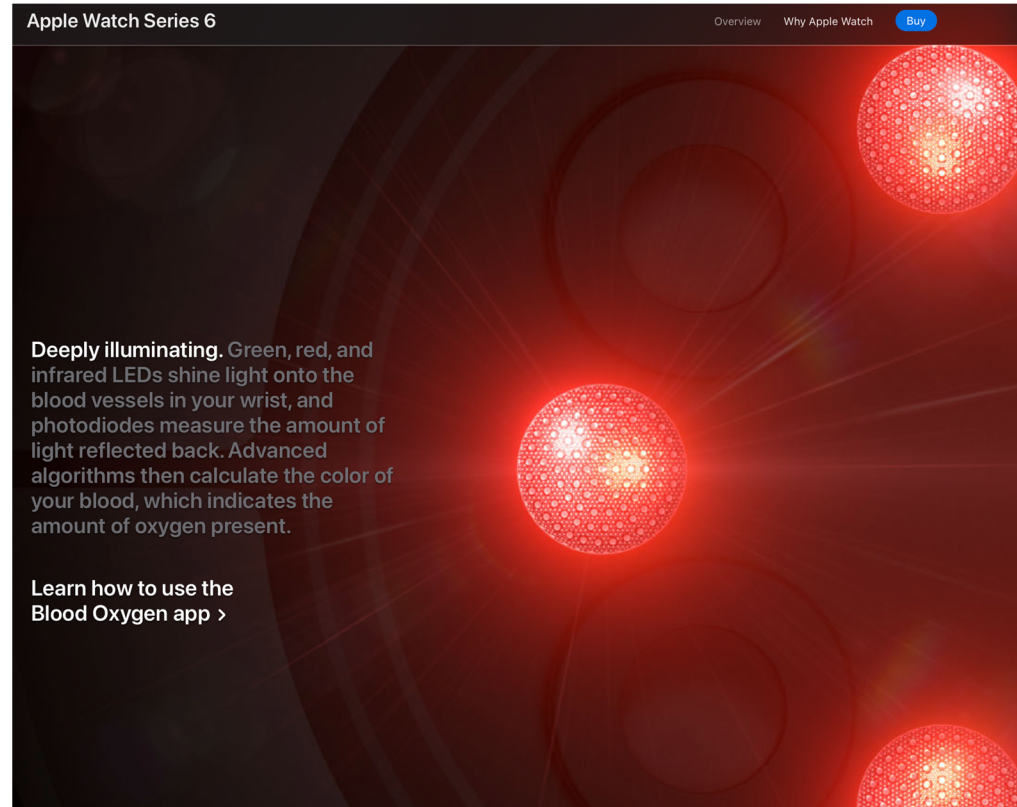
Claim 1	Apple Watch Series 6
<p>a measurement of the physiological parameter of the user.</p>	<p>For example, Apple acknowledges that Apple Watch Series 6 has a “S6 SiP with 64-bit dual-core processor.” Apple acknowledges that photodiodes measure the amount of light reflected back (see above) and, on information and belief, advanced algorithms executing on the “S6 SiP with 64-bit dual-core processor” then receive signal(s) related to that measurement from the photodiodes to calculate oxygen saturation. <i>See, e.g.,</i> <a href="https://support.apple.com/kb/SP826?locale=en_US">https://support.apple.com/kb/SP826?locale=en_US</a> (last visited Dec. 5, 2022) (“Apple Watch Series 6 - Technical Specifications” listing “S6 SiP with 64-bit dual-core processor”); <a href="https://www.apple.com/watch/compare">https://www.apple.com/watch/compare</a> (last visited Dec. 5, 2022) (same).</p> <p>A teardown of Apple Watch Series 6 shows, for example, the S6 SiP (which includes a 64-bit dual-core processor, as noted above).</p> 



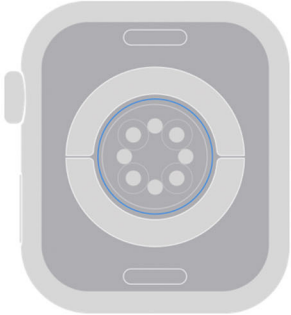
Claim 1	Apple Watch Series 6
	<p><i>See, e.g.,</i> <a href="https://www.apple.com/newsroom/2020/09/apple-watch-series-6-delivers-breakthrough-wellness-and-fitness-capabilities">https://www.apple.com/newsroom/2020/09/apple-watch-series-6-delivers-breakthrough-wellness-and-fitness-capabilities</a> (last visited Dec. 5, 2022) (Apple’s Sept. 15, 2020 press release announcing Apple Watch Series 6: “Apple Watch Series 6 delivers many notable hardware improvements, including a faster S6 System in Package (SiP) . . .”).</p> <p><i>See, e.g.,</i> <a href="https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/">https://web.archive.org/web/20200917194525/https://www.apple.com/apple-watch-series-6/</a> (last visited Dec. 5, 2022) (“Green, red, and infrared LEDs shine light onto the blood vessels in your wrist, and photodiodes measure the amount of light reflected back. Advanced algorithms then calculate the color of your blood, which indicates the amount of oxygen present.”) (excerpted and reproduced below).</p>

## Claim 1

## Apple Watch Series 6



See, e.g., <https://web.archive.org/web/20220725113915/https://support.apple.com/en-us/HT211027> (last visited Dec. 5, 2022) (“In Apple Watch Series 6 and Series 7, the optical heart sensor has been redesigned to add blood oxygen measurement capabilities. During a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto your wrist. Photodiodes then measure the amount of light reflected back. Advanced algorithms use this data to calculate the color of your blood. The color determines your blood oxygen level — bright red blood has more oxygen, while dark red blood has less.”) (excerpted and reproduced below).

Claim 1	Apple Watch Series 6
	<p data-bbox="690 289 1291 332"><b>How the Blood Oxygen app works</b></p> <p data-bbox="690 354 1719 443">In Apple Watch Series 6 and Series 7, the optical heart sensor has been redesigned to add blood oxygen measurement capabilities. During a blood oxygen measurement, the back crystal shines red and green LEDs and infrared light onto your wrist. Photodiodes then measure the amount of light reflected back.</p>  <p data-bbox="690 802 1719 859">Advanced algorithms use this data to calculate the color of your blood. The color determines your blood oxygen level — bright red blood has more oxygen, while dark red blood has less.</p>